IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

IN THE MATTER OF APPLICATIONS 64692, 64693 FILED TO APPROPRIATE AND APPLICATION 66932 FILED TO CHANGE THE POINT OF DIVERSION AND PLACE OF USE THE UNDERGROUND WATERS OF THE TULE DESERT HYDROGRAPHIC BASIN (221), LINCOLN COUNTY, NEVADA.

RULING

#5181

GENERAL

I.

Application 64692 was filed on December 11, 1998, by Lincoln County and Vidler Water Company, Inc., to appropriate 10.0 cubic feet per second (cfs) of underground water in the Tule Desert Hydrographic Basin.[1] The water is to be used for municipal purposes within all of T.12S., R.71E., and Sections 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, 35 and 36, T.12S., R.70E., M.D.B.&M. The proposed point of diversion is described as being located within the SE¼ SE¼ of Section 2, T.9S., R.69E., M.D.B.&M., Lincoln County, Nevada. Item 12 (Remarks) provides that the use of water under the application is proposed for future growth and development of the Mesquite area within Lincoln County, Nevada.

II.

Application 64693 was filed on December 11, 1998, by Lincoln County and Vidler Water Company, Inc., to appropriate 10.0 cfs of underground water in the Tule Desert Hydrographic Basin.[2] The water is to be used for municipal purposes within the same place of use as described under Application 64692. The proposed point of diversion is described as being located within the NE¼ NW¼ of Section 1, T.10S., R.68E., M.D.B.&M., Lincoln County, Nevada. The remarks are the same as found under Application 64692.

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[1] Exhibit No. 2, public administrative hearing before the State Engineer, May 14-16, 2002, official records in the Office of the State Engineer. Hereinafter exhibits from this hearing will be referred to by their exhibit number and the transcript will be referred to by page number.

[2] Exhibit No. 3.

III.

Application 66932 was filed on November 8, 2000, by Lincoln County and Vidler Water Company, Inc., to change the point of diversion and place of use of the water requested for appropriation under Application 64693.[3] The water is to be used for municipal purposes within the same place of use as described under Application 64692, with the addition of Section 36, T.11S., R.69E., M.D.B.&M. The proposed point of diversion is described as being located within the SW¼ NW¼ of Section 4, T.10S., R.69E., M.D.B.&M., Lincoln County, Nevada. Item 12 (Remarks) provides that the use of water under the application is proposed for municipal purposes, including power plant cooling, and the future growth and development of the Mesquite area within Lincoln County, Nevada.

IV.

Applications 64692 and 64693 were timely protested by the U.S. Department of the Interior, National Park Service (NPS);[4] however, the NPS withdrew its protests based on a Stipulation entered into with the applicants.[5] The Stipulation recites, among other things, that:

1. The applications as filed request a combined maximum duty of 14,500 acre-feet annually, and the applicants initially intend to pump up to 7,240 acre-feet annually for a period of 42 years for the Toquop Energy Project, and thereafter for municipal and domestic uses in Lincoln County.

2. Lincoln County and Vidler propose to request the State Engineer hold in abeyance the remaining amount under the applications until a determination can be made from the monitoring of the initial groundwater withdrawals that there are no

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[3] Exhibit No. 4.

[4] Exhibit No. 5.

[5] Exhibit No. 8.

unreasonable adverse impacts due to the initial groundwater pumping.

3. The parties to the Stipulation desire to implement a monitoring, management and mitigation program as set forth in Exhibit A to the Stipulation.

V.

Applications 64692 and 64693 were timely protested by the Virgin Valley Water District (VVWD) on the following grounds:[6]

> 1. The subject application was filed for the purposes of speculation with no defined ultimate use or project and accordingly is not in the public interest.
>
> 2. The Applicant does not own or control the proposed place of use.
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> 3. The granting of the subject application will adversely impact existing rights of the Protestant and could further adversely impact the potable water source for residents of the City of Mesquite, the Town of Bunkerville and others within the service area of the Protestant.
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> 4. Upon information and belief, the granting of the subject applications, particularly when considered with other applications filed concurrently by the Applicants, will adversely impact the quality of water heretofore appropriated by the Protestant.
>
> 5. The granting of the subject application, particularly when considered with other applications filed concurrently by the Applicants, will adversely impact existing springs and seeps that provide a source of water for wildlife (including some species listed under the Endangered Species Act).
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> 6. The source of resource the Applicants seek to appropriate is regional in character and the granting of the subject application, particularly when considered with other applications filed concurrently by the Applicant, will adversely impact existing rights, including, but not limited to, those of the Protestant.

[6] Exhibit No. 6.

7. The Applicant, Vidler Water Company, Inc. is barred from appropriating public waters of this State due to deficiencies in its status with the Nevada Secretary of State.

Therefore, the Protestant requested the Applications be denied.

VI.

Application 66932 was timely protested by the VVWD on the following grounds:[7]

1. The grounds of this Protestant's protest to the base right sought to be changed, Application 64693, are incorporated herein by reference.

2. The granting of the subject application will exacerbate the adverse impact of the Protestant's existing rights to water as the source for potable water for the City of Mesquite and the Town of Bunkerville due to the hydrologic connection between Basins Nos. 221 and 222.

3. The granting of the subject application will exacerbate the adverse impact on the quality of water heretofore appropriated by the Protestant.

4. The granting of the subject application is not in the public interest in that it will exacerbate adverse impacts on existing springs and seeps that provide a source of water for wildlife, including but not limited to, some species listed under the Endangered Species Act.

VII.

After all parties of interest were duly noticed by certified mail, a public administrative hearing was held on May 14-16, 2002, before the State Engineer at Carson City, Nevada.[8]

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[7] Exhibit No. 7.

[8] Exhibit No. 1; Transcript, public administrative hearing before the State Engineer, May 14-16, 2002.

FINDINGS OF FACT

I.

Protestant VVWD alleges that the subject applications were filed for the purposes of speculation with no defined ultimate use or project, and accordingly, the applications are not in the public interest.

The issue of speculating in water rights has previously been addressed in two separate rulings. In State Engineer's Ruling No. 4192[9], the State Engineer addressed the filing by a private entity of 39 applications for municipal purposes that each requested a diversion rate of 10.0 cfs. The total quantity requested, under a diversion rate expanded analysis,[10] totaled over 280,000 acre-feet annually of underground water from Elko, Eureka, Humboldt, Lander and Pershing Counties. Because the applicant was not a municipality, prior to acting on the applications, the State Engineer requested, among other things, the applicant submit information as to contracts, agreements or options with municipalities that were able to put the water to beneficial use within the 10 years stated on the applications. No adequate response was ever received to this request for information, and there was nothing in the records to indicate that the applicant itself intended to develop the water and place it to beneficial use. The State Engineer concluded in denying the applications that since the applicant was not a municipality, not an electric utility, and could not answer the need to pump ground water for environmental purposes, that the applications were filed for possible resale and speculation and it was not in the public interest to approve applications where the applicant could not demonstrate the ability to place the water to beneficial use.

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[9] State Engineer's Ruling No. 4192, dated June 19, 1995, official records in the Office of the State Engineer.

[10] Wells pumping at the diversion rate requested 24 hours per day 365 days per year.

In State Engineer's Ruling No. 4548,[11] again the State Engineer addressed the filing by a private entity of five applications each for a diversion rate of 8.0 cfs totaling over 25,000 acre-feet annually of underground water from the Amargosa Valley Hydrographic Basin within Nye County, Nevada. These applications were also filed for municipal purposes with a place of use described in general terms as the Amargosa Valley and Clark County. However, when the Clark County Commission voted to reject any plans for taking the water developed, the applicant filed change applications now requesting a manner of use for wildlife purposes with an the ultimate goal of leaving the water in the ground and selling the rights to Federal Government for the protection of endangered and indigenous species. The State Engineer sent the applicant a letter noting that an earlier priority date may not be retained by using change applications until a project can be formulated for use of the water requested for appropriation. Therefore, in reference to the original applications, the State Engineer requested more information from the applicant, including, since the applicant was not a municipality, contracts, agreements or options with municipalities that indicate the water would be beneficially used. In response to the State Engineer's request for information, the applicant indicated it needed time to refocus its efforts towards the original applications, and needed more time to formulate responses to the questions presented.

In State Engineer's Ruling No. 4548, it was noted that the Nevada Legislature has become increasingly concerned over applications filed for speculation where the sole intent of the applicant is not to place the water to beneficial use, but merely to provide a profit from the sale of water to interested parties. In 1993, the Nevada Legislature amended the provisions of Nevada

[11] State Engineer's Ruling No. 4548, dated July 25, 1997, official records in the Office of the State Engineer.

Water Law to address the issue by adding the language now found NRS § 533.370(1)(c), which provides that the applicant must provide proof satisfactory to the state engineer of: (1) his intention in good faith to construct any work necessary to apply the water to the intended beneficial use with reasonable diligence; and (2) his financial ability and reasonable expectation to actually construct the work and apply the water to the intended beneficial use with reasonable diligence. In the Ruling, the State Engineer found that the applicant was trying to find a project to support its applications and justify their continuance, and that the applicant went after the water merely in hopes of selling it to someone else for a profit upon finding a project in which the water could be used; and thus, denied the applications on the ground they were speculative.

The applications under consideration in this ruling are unique because now the private entity has filed them in conjunction with Lincoln County, and Lincoln County does have the characteristics of a municipality in that it regulates the internal affairs of a major political unit with powers of self-governance.

In 2000, the United States Congress passed the Lincoln County Land Act (Public Law 101-298). This act provides for in Phase I for the conveyance of 6,478 acres of land administered by the United States Department of Interior, Bureau of Land Management to private ownership in the southeastern corner of Lincoln County near the City of Mesquite, which includes the place of use under these applications.[12] Further, a land exchange has been initiated[13]

[12] Transcript, p. 337; Exhibit 30. The State Engineer notes it is his understanding that three environmental groups filed a lawsuit in U.S. District Court alleging the U.S. Bureau of Land Management failed to consider the cumulative impacts from the land auction and power plants proposed for the area. Las Vegas Review Journal, June 27, 2002. Therefore, he is unsure as to the status of any land exchange under the Lincoln County Land Act.

[13] Exhibit Nos. 33, 34; Transcript, pp. 349-350.

for another parcel (identified as the Toquop Wash Parcel), which is the additional proposed place of use added under change Application 66932, and the location for the proposed Cogentrix Toquop power plant project.

The 6,478 acres comprising the Phase I land were scheduled for sale subject to competitive bid at an oral auction that was held on October 12, 2001.[14] The 6,478 acres were divided into three parcels: a 4,357-acre parcel (Parcel A); a 2,009-acre parcel (Parcel B); and a 112-acre parcel (Parcel C).[15] To the State Engineer's knowledge, only the 112-acre parcel sold, and the rest of the lands remain under Federal control.[16] The initial 7,240 acre-feet of water requested by the Applicants is the water for use at the proposed Cogentrix power plant project, and has nothing to do with the development of the Lincoln County Land Act lands. Testimony and evidence was provided to demonstrate the diligence taken on the part of Cogentrix towards moving forward with the planned power plant project, but no evidence was provided as to any water use within the Lincoln County Land Act lands.[17]

These applications and the Lincoln County Land Act lands present the State Engineer with a unique situation. A governmental entity is trying to plan the water source for lands, which may or may not be transferred into private hands, with no referenced time frame for when those lands might actually be purchased, if ever. No evidence was presented that any purchaser of lands within the area of the Lincoln County Land Act would be required to obtain water from the Applicants or that the owner of the 112-acre parcel has requested water service from the

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[14] Exhibit No. 30, p. 2.

[15] Exhibit No. 30, p. 2-1.

[16] Las Vegas Sun, June 27, 2002.

[17] Exhibit Nos. 27, 28, 33, 34, 35 & 36.

Applicants. The Lincoln County Water Plan indicates that the County hopes to be the wholesale water provider to the lands encompassed within the area of the Lincoln County Land Act, and to generate revenue by also exporting water out of Lincoln County.

> Lincoln County could become a water wholesaler by developing infrastructure to transport water across the county to locations within the county or to locations outside of county boundaries. One possible scenario would be to move water from Lincoln County to the Mesquite area. The County could also import water from adjacent counties, use the water internally or export the water outside of its boundaries.[18]

The State Engineer finds, that by joining with Lincoln County, Vidler has avoided the appearance of speculation, because Lincoln County is attempting to plan for providing water resources to lands within the County that have begun to go into or may go into private hands, or lands that are believed will be exchanged for the location of Cogentrix's Toquop power plant project. The State Engineer finds it difficult to say that a county trying to plan for its future on lands that are hopefully going to be converted to private property pursuant to an act of Congress and an initiated land exchange is speculating under its water right applications, and finds Lincoln County is acting in its governmental capacity.

II.

Lincoln County and Vidler have requested the State Engineer initially grant 7,240 acre-feet under Application 64693 and change Application 66932 for the power plant project and hold in abeyance the remaining amount under Application 64692 until a determination can be made from the monitoring of the initial groundwater withdrawals that there are no unreasonable adverse impacts due to the initial groundwater pumping.

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[18] A Water Plan for Lincoln County, Final Plan March 20, 2001, pp. 2, 38, official records in the Office of the State Engineer.

Nevada Revised Statute § 533.370(2) provides that:

> (a) Action may be postponed by the state engineer upon written authorization to do so by the applicant or, if an application is protested, by the protestant and the applicant; and
> (b) In area where studies of water supplies have been determined to be necessary by the state engineer pursuant to NRS 533.368 or where court actions are pending, the state engineer may withhold action until it is determined there is unappropriated water or the court action becomes final.

The State Engineer finds the applicant has an agreement with Protestant National Park Service[19] to withhold action on a portion of the water rights applied for under the applications at issue in this ruling, but no such agreement was reached with Protestant Virgin Valley Water District; therefore, there is no compliance with the statutory provision of subsection (a) referenced above.

In reference to these applications (as discussed further below), the Applicants left a question in the State Engineer's mind whether the appropriations were from the alluvial aquifer or the carbonate-rock aquifer, or both. Testimony was provided by a witness for the Applicants as to increasing the figure as to the amount of recharge entering the groundwater basin by a factor of three to four times greater than that estimated by the United States Geological Survey and the Department of Conservation and Natural Resources, Division of Water Resources. However, much of the discussion as to the production well No. 1 (PW-1) appeared to reference a carbonate-rock aquifer source of water. The Applicants have presented the State Engineer with a dilemma. The Applicants are requesting the use of the provisions of NRS § 533.370(2) to obtain delay in acting on one of the applications on the grounds that more information is necessary as to the source of the water, but also appear to be using it as a way to stall,

[19] Exhibit No. 8.

because they never demonstrated any beneficial use of the water on the Lincoln County Land Act lands could occur in the near future.

The State Engineer finds additional study is needed before he can make a final determination on the entire quantity applied for under these applications, whether they are the alluvial or carbonate-rock aquifer sources of water. Due to the fact that the Applicants are requesting a quantity of water far in excess of the established perennial yield and due to the uncertainties of the carbonate-rock aquifer system, the State Engineer finds he will act in entirety on Applications 64693 and 66932, but finds it reasonable to hold Application 64692 in abeyance until the Applicants complete additional studies of the groundwater basin. These studies must include recharge analysis that is peer reviewed and accepted by the United State Geological Survey in conjunction with the Department of Conservation and Natural Resources, Division of Water Resources, and studies of the impacts of pumping the amount granted in this ruling.

III.

The Applicants' geologic and geophysical testimony and evidence indicated that:

- The Tule Desert is on the eastern edge of the carbonate-rock province, and the boundary of the carbonate-rock province in this area is not far east of the production well identified as PW-1.[20]
- The Applicants' conceptual geologic understanding was incorrect, particularly as to the central portion of the basin, initial geologic cross sections were not of much value, and the geology was much more complex than they anticipated.[21]
- A massive block demonstrating high resistivity exists in the central portion of the valley, it is so large it is expected to have a lot of influence on flow paths in the valley, and it is

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[20] Transcript, pp. 33, 50-51.

[21] Transcript, pp. 34-39, 54, 65, 97.

unclear what happens to this large resistive block in the north portion of the valley.[22]

- East of this massive block, the resistivity exhibits lower characteristics perhaps indicating a fractured or faulted zone, or perhaps clay.[23] West of the massive block were found moderate to low resistivities, which are primarily believed to be the result of volcanic clays and tuffaceous materials, and is probably an area where water production would be poor.[24]

- The surface fracturing that goes out into the basin was not readily apparent.[25] The Tule Fault is on the east side of the basin, there are a series of faults going generally north/south along the eastern edge and to the south, and there are basin forming faults with fewer faults on the west side of the basin.[26]

- Volcanogenics are present on the north and west sides of the valley.[27]

- Geologic correlation was not found between the wells drilled and identified as MW-1 and MW-2.[28]

- A convergence of geophysical anomalies is found in the area of the production well drilled and identified as PW-1 where fractured carbonate was found at depth.[29]

- West of the production well identified as PW-1, and north at monitoring well MW-2 not much carbonate rock was demonstrated, and

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[22] Transcript, pp. 85-100; Exhibit Nos. 15 & 16.

[23] Transcript, p. 87.

[24] Transcript, pp. 106-107.

[25] Transcript, p. 34.

[26] Transcript, p. 52.

[27] Transcript, p. 52.

[28] Transcript, pp. 53-60.

[29] Transcript, p. 105.

that by moving four miles north/northeast of PW-1 the carbonate-rock predominance is lost.[30]

The Protestant VVWD's geologic evidence indicated that:[31]
- In the basin and range province, the basins are formed by fault structures. Many fault structures running generally north/south come into the lower Virgin River Valley.[32] The West Tule Desert fault forms the west side of the Tule Desert trending in a northeast/southwest direction. The major fault on the east side of the Tule Desert is the East Tule Desert fault, which is located on the western margin of the Tule Springs Hills also trending northeast/southwest between the Mormon Mountains and the East Mormon Mountains, with a splay that trends off to the east just north of the Tule Springs Hills into Beaver Dam Wash.[33]
- At the south end of Tule Desert, the Gourd Spring Fault trends north/south.[34]
- "South Tule Desert is at the margin of two distinct and extremely complex structural regimes."[35]
- North of Bunkerville and Mesquite there are a number of north/south trending faults into the lower Virgin River Valley, and faults through the Toquop Wash area trend northwest/southeast toward the Bunkerville area and lower Virgin River Valley.[36]
- In the Clover Mountains, just north of Hydrographic Basin 221,

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[30] Transcript, pp. 285-286.

[31] See also, Exhibit Nos. 46 and 47.

[32] Exhibit No. 46, Figures 2, 3, 4 and 5; Exhibit No. 47, pp. 7-14.

[33] Transcript, pp. 479-495.

[34] Exhibit No. 47, Figure 3.

[35] Exhibit No. 47, p. 11.

[36] Exhibit No. 46, Figures 3 and 4.

exists the Caliente Caldera Complex, which may act as a barrier to groundwater flow from the north to the south.[37]

- The east side of the Tule Springs Hills is riddled with faults indicating the possibility of a great deal of structural connection heading south from the Tule Desert into the lower Virgin River Valley. Witnesses agree it is a very complex system, and it is very difficult to make sense out of the subsurface stratigraphy.[38]

- Tule Desert and the Virgin River Valley are connected by faults and ground water comes into the Virgin River Valley from the north, coming up from great depth to fill the sediments in the Virgin River Valley. Most of the water that flows out of Tule Desert does so in a direction that is parallel to Toquop Wash, and is joined by water that is flowing in the numerous faults zones that bisect the Tule Springs Hills and flows southward.[39]

- So many faults riddle the system that capturing all the water in the system would be fairly tricky.[40]

- Impact from pumping in Tule Desert will be minimal outside of Tule Desert, but there is a major impact of removing water from the flow system to the Virgin River Valley.[41]

- The Muddy Creek formation is extremely important as it provides Mesquite and Bunkerville all their potable water supply, and may be in connection with upgradient carbonate-rock aquifer flow.[42]

- Tule Desert is in hydraulic continuity with the Virgin River Basin, it is the same aquifer system separated by a few jumbled

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[37] Transcript, pp. 484-488; Exhibit No. 47, pp. 9-10.

[38] Transcript, pp. 488-491.

[39] Transcript, pp. 606-614.

[40] Transcript, pp. 632-633.

[41] Transcript, pp. 618-622.

[42] Transcript, pp. 521-523.

hills in Tule Springs.[43]

The State Engineer finds it is agreed that the geology of Tule Desert is extremely complex. The State Engineer finds it is agreed that Tule Desert and the lower Virgin River Valley are likely geologically connected. The State Engineer finds the massive resistive block found in the center of Tule Desert does not provide evidence of large carbonate-rock bearing water strata in a significant portion of the basin at a reasonable depth from which water can be economically appropriated. The State Engineer finds the western portion of Tule Desert does not indicate potential for significant water production. The State Engineer finds Tule Desert contains significant faulting that trend generally from north to south, but there is insufficient evidence to clearly indicate the direction of flows paths out of Tule Desert. The State Engineer finds the evidence indicates significant water production is usually only successful along the fractured faults. The State Engineer finds there is not sufficient evidence of rock types or faults providing a great deal of flows paths into the northern portion of Tule Desert. The State Engineer finds the Applicants may have a convergence of anomalies that provided the flow found at production well PW-1.

IV.

The Applicants' geochemical evidence indicates that:[44]

- Geochemistry can be used to attempt to determine potential flow paths; however, where a great amount of data does not exist, it must be used with caution.[45]
- The springs in Tule Desert Hydrographic Basin are locally recharged as opposed the flow originating as discharge from the

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[43] Transcript, p. 534.

[44] See, Exhibit No. 18.

[45] See generally, Exhibit No. 18; Transcript, pp. 119-229.

carbonate-rock aquifer system.[46]

- The ground water found in the carbonate rocks in Tule Desert is very old, perhaps 30,000 to 50,000 years.[47]
- "In summary, the water chemistry from current sampling locations in Tule Desert indicates that the groundwater produced by the deep carbonate aquifer at PW-1 and is hydraulically connected to the upgradient regional carbonate aquifer groundwater."[48] But, other testimony indicated that the ground water found at PW-1 could be from "a very lonely place, it is isolated from practically everything." [49]
- The deuterium and chloride values could tie the ground water to areas as far away as Dry Valley, but it cannot be ruled out that Dry Valley is part of the Meadow Valley flow system.[50]
- The deep carbonate aquifer that is discharging at Flat Nose Spring in Dry Valley has a strong probability of being the water source for the carbonate of Tule Desert.[51]
- Geochemical analysis depends greatly on the depth from which water samples are pulled, and the evidence indicates there is stratification in the groundwater system.[52]
- The ground water in the Tule Desert fractured rock system flows to the Virgin Valley Depression in Hydrographic Basin 222.[53]
- The water tested in Tule Desert is not the same geochemically as

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[46] Transcript, pp. 138, 145; Exhibit No. 18, pp. 10-12.

[47] Transcript, p. 148; Exhibit No. 18, pp. 11-12.

[48] Exhibit No. 18, p. 11.

[49] Transcript, pp. 153; Exhibit No. 18, Figure 16.

[50] Transcript, pp. 295-296.

[51] Transcript, pp. 193-194.

[52] Transcript, pp. 162-163.

[53] Transcript, p. 299.

the source of water coming into the Virgin River Valley alluvium, and there is no chemical signature of Tule Desert ground water downgradient of Tule Desert.[54]

- The ground water produced from the deep carbonate aquifer out of PW-1 in the Tule Desert is not a probable source of ground water within the boundaries of existing groundwater production in the Virgin River Valley, but the ground water being produced out of existing wells in the Lower Virgin River Valley may come from the west side of the Beaver Dam Mountains.[55]
- The geochemist's analytical opinion is that ground water from Tule Desert moves due south in the deep carbonate, either into or under Lake Mead, but there is no evidence to support that opinion as there is no data.[56]
- The geochemical testimony is highly conceptual.[57]
- PW-1 has chemical properties presenting a signature of the regional flow system, and ground water that has traveled.[58]

The Protestant VVWD's geochemical evidence indicated that:[59]

- The Tule Desert alluvial aquifer is supplied by local recharge.[60]
- The water found in the deeper carbonate-rock aquifer does not come from local recharge, they are clearly two different bodies of water, and the water found in PW-1 is from the deeper water.[61]

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[54] Transcript, pp. 178, 184, 210-214.

[55] Transcript, pp. 181-184.

[56] Transcript, pp. 181-197.

[57] Transcript, p. 297.

[58] Transcript, pp. 293-294.

[59] See, Exhibit No. 53.

[60] Transcript, p. 427.

[61] Transcript, pp. 427-429.

- The carbon-14 data out of PW-1 could indicate the water was not part of the regional flow system, that it is isolated water and is 10,000 years old, the water chemistry in PW-1 does not indicate classic carbonate, and the age could mean it is isolated from the flow system.[62]

- There are three possible sources for the carbonate-rock aquifer water found in Tule Desert, but the data does not exist to answer the question. Potential sources for the deep water found in Tule Desert could be Panaca Valley, under Lower Meadow Valley Wash or northern Beaver Dam Wash.[63]

- Geochemical analysis indicates that the carbonate-rock aquifer water clearly ends up in the lower Virgin River Valley, that is in the Mesquite and Bunkerville areas.[64] The water from the wells in the lower Virgin River Valley and the Mesquite/Bunkerville area do have the same isotopic signature as seen in the Tule Desert, but the source cannot be pinned down from a chemical standpoint. However, the chemistry and isotopic data strongly suggest a flow path from Tule Desert carbonate to the Mesquite area.[65]

- The data is very limited, and three data points are not enough to determine flow paths.[66]

The State Engineer finds the geochemical evidence is very sketchy and contradictory. The State Engineer finds the lack of sufficient data indicates that the geochemical data should not be given a great deal of weight in the decision making process. The State Engineer finds the geochemical evidence substantiates that

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[62] Transcript, pp. 431, 448.

[63] Transcript, pp. 433-453.

[64] Transcript, p. 441.

[65] Transcript, pp. 436-441, 453-454.

[66] Transcript, p. 447.

even in a basin as studied as the Virgin River Valley there is much that is not known. The State Engineer finds he does not place a great amount of reliance on the geochemical analysis as to ultimate decision making in a system as large and complex as the carbonate-rock aquifer.

V.

The Applicants presented evidence of a much greater recharge to the Tule Desert groundwater basin and that a greater water yield is available to be appropriated from the groundwater basin in an attempt to support the quantity of water applied for under their application(s). The Applicants argue they have more certain and accurate methods of estimating recharge to the groundwater basin, and that their witnesses opinions and conclusions are not theoretical or speculative.[67] However, as just noted, the Applicants' evidence also indicates that the alluvial and carbonate systems are stratified and not the same water. The Protestant VVWD conversely argues that the Applicants' information is speculative and inconclusive.[68]

The State Engineer recognizes that the United States Geological Survey is recalculating some of the figures as to recharge to groundwater basins in Nevada, but is not aware that this work has been performed for the Tule Desert Hydrographic Basin. The State Engineer recognizes that he has previously held, in rulings addressing carbonate-rock aquifer flow in the White River flow system, that perhaps new perennial yield or system yields need to be established for groundwater basins in southern Nevada that appear to have substantial carbonate-rock aquifer flows, but also recognizes that he has previously held that further analysis is required. The State Engineer recognizes that he has allowed other applicants to test the system, but that was

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[67] Transcript, pp. 12-14.

[68] Transcript, p. 18.

done on the basis that those applicants had water resources to mitigate impacts, which these Applicants do not.

One of the Applicants' witnesses used an altitudinal precipitation formula developed and proposed for the adjacent Virgin River Hydrographic Basin and several other reports in his analysis of recharge to the Tule Desert Hydrographic Basin.[69] His methodology is based on vegetation as an indicator of annual precipitation. Both the Applicants' and the Protestant VVWD's witnesses believe that recharge in the Tule Desert Hydrographic Basin is significantly higher than the original estimates made by Glancey and Van Denburgh.[70] The Applicants' witness found that in the northern portion of the Tule Desert Hydrographic Basin certain altitudinal precipitation relationships were applicable based on the vegetation found; but, in the southern part of the basin, the higher precipitation formula did not seem applicable. Therefore, a couple of different altitudinal precipitation formulas were used to estimate recharge.[71]

Testimony indicates that estimates for recharge to the Tule Desert Hydrographic Basin can range anywhere from 1,078 acre-feet annually using a dry formula to as high as 9,000 acre-feet annually using the Virgin River Basin formula.[72] Because of this high variation, the Applicants' witness believes it provides a reason for using yet another methodology, his vegetative correlation, but there is "not a lot of scientific research and/or scientific methodology to it, I think it's an art science type thing."[73] Precipitation data was very limited being that it was

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[69] Transcript, pp. 234-254; Exhibit Nos. 20, 21, 22, 23, 24 and 25.

[70] Exhibit No. 21.

[71] Transcript, pp. 238-240.

[72] Transcript, pp. 238-239.

[73] Transcript, pp. 239-242.

for a four-year period (1964-1967) in an adjacent basin, and other data indicates that this was a wet period of time.[74]

The State Engineer finds Applicants' witness' ultimate opinion was there is between 7,292 and 8,095 acre-feet annually of recharge to the groundwater basin in the Tule Desert Hydrographic Basin.[75] The witness recognized his report has not been peer reviewed and the United States Geological Survey or the Department of Conservation and Natural Resources, Division of Water Resources have not accepted these figures.[76] The State Engineer finds that it was pointed out to the witness on cross-examination that Appendix A to Exhibit No. 20 has errors in figures used for calculations.[77] Further, the State Engineer finds the Applicants' witness did not equate recharge with perennial yield, but rather merely as being the input part of a water budget.[78]

VI.

The Applicants' presented Frank Lewis as a witness to provide the State Engineer with a number to support the request for 7,240 acre-feet annually initially from the underground water of the Tule Desert Hydrographic Basin. Mr. Lewis was taking his "first stab" at working with the carbonate-rock aquifer(s) of southern Nevada.[79] The State Engineer notes that scientists have been studying these aquifers for decades now and have not come to resolution on questions about the carbonate-rock aquifer(s) or their ability to sustain the production of large quantities of water over time without devastating effects or depleting the water

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[74] Transcript, pp. 239-240.

[75] Transcript, p. 245.

[76] Transcript, pp. 244-245.

[77] Transcript, p. 250.

[78] Transcript, pp. 252-253.

[79] Transcript, p. 262.

in storage.[80] Therefore, the State Engineer is not extremely confident in the Applicants' witness's predictions as to water availability or impacts, particularly as noted when based on a model that does not appear to be calibrated or validated, and for which there is little real world data input. The Applicants' witness indicated he was basing his potential water level decline analysis[81] on a well field represented by four wells pumping 1,100 gallons per minute.

The State Engineer is not acting on four applications for new appropriation of water in this ruling, but rather, he is acting on one application that was filed for a diversion rate of 10 cfs. The State Engineer further notes that the Applicants' aquifer test never went past 1,400 gallons per minute,[82] which converts to a diversion rate of 3.12 cfs for a maximum duty of 2,258 acre-feet annually.

The Applicants' hydrogeologist's report indicates that:

> BASIN-FILL DEPOSITS
> Based on the current understanding of the groundwater conditions in the Tule Desert basin-fill deposits, this resource is likely to be limited and therefore unreliable to support additional development beyond its current usage (small stock wells). Several factors support this conclusion regarding groundwater availability in the basin-fill deposits: (1) highly variable and deep (between 390 and 720 feet) depth to groundwater; (2) variable, and potentially thin (i.e., roughly 100-feet thick) saturated thickness; (3) predominantly fine-grained sediments within the saturated zone; (4) apparent lateral discontinuity in

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[80] See, State Engineer's Ruling No. 4243, dated October 27, 1995; State Engineer's Ruling No. 4542, dated June 19, 1997; State Engineer's Ruling No. 5008, dated March 20, 2001; State Engineer's Ruling No. 5115, dated April 18, 2002, Exhibit No. 41; State Engineer's Order No. 1169, dated March 8, 2002, official records in the Office of the State Engineer.

[81] Exhibit No. 28.

[82] Exhibit No. 28.

> the stratigraphy of the saturated sediments; and (5) potentially poor specific capacity based on information from the Tule Desert Well (<0.1 gallons per minute per foot [gpm/ft]).
>
> FRACTURE-ROCK AQUIFER
>
> Groundwater in the Tule Desert fractured-rock aquifer is sufficient to support the proposed withdrawal of 7,000 acre-feet per year (afy), based largely on estimates of the amount of groundwater flowing within this aquifer beneath Tule Desert. Aquifer transmissivity, together with the magnitude of the horizontal component of hydraulic gradient, enable the amount of groundwater flowing through the aquifer to be estimated. Accordingly, using a representative value of transmissivity (14,500 gallons per day per foot [gal/day/ft]) from the PW-1 aquifer test results, the observed hydraulic gradient (0.02) between MW-2 (deep), MW-3, and MW-4, and an assumed representative value for the width of the Tule Desert for which these aquifer parameters determined from recent testing can reasonably be applied (20,000 feet, or 3.8 miles), the flow through this portion of the Tule Desert is roughly 6,500 afy.
>
> In addition, outside of this roughly 4-mile width and still within the Tule Desert, the parameters in the aforementioned calculation are represented by other unknown values; consequently, groundwater also flows within the Tule Desert fractured-rock aquifer outside and parallel to the 4-mile width selected for the calculation above. This additional amount (which would raise the total over the 6,500 afy), however, cannot be reasonably calculated at this time.[83]

Other evidence from the Applicants indicated that:

- The Tule Desert is a subbasin of Hydrographic Basin 222, because all ground water within the Tule Desert flows to the Virgin River Valley Hydrographic Basin, but a witness opined the flows goes into the southern portion of the basin - the Mormon subbasin - and is west of Mesquite and downgradient of the existing municipal wells in the Virgin River Valley.[84]
- There is only so much water in the system and if it is taken out

[83] Exhibit No. 27, p. 5-1.

[84] Transcript, pp. 319-320.

one place it cannot be pumped out in another, and clearly at some stage there will be water level drawdowns.[85]

- The aquifer test indicated transmissivities in PW-1 well of 10-20,000 gallons per day per foot, and drawdown data matched closely with the Theis non-equilibrium equation.[86]

- The aquifer test indicated a hydrologic connection with the basin fill material and pumping at the rate of 1,400 gallons per minute over several days saw dramatic water level decreases with water levels drawn down into the rock.[87]

- One witness indicated there is a vertical component of hydraulic gradient in the vicinity of well MW-2 that is downward suggesting contribution from the basin fill to the carbonate-rock.[88]

- Estimates were provided of a lateral flow of 6,500 acre-feet annually the Tule Desert aquifer through an area 4 miles in width based on transmissivities tested at PW-1. Further, there is a belief there is also some deeper flow for which there is no data to quantify, but that because of different rock types across the basin values cannot be extended ubiquitously across the basin.[89]

- It is unclear where water flows out of the southern portion of the valley.

- High resistivities were found in the Toquop gap area; therefore, the Applicants' witness would not consider it a flow path.[90]

- The Applicants' model indicated that four wells pumping at 1,100 gallons per minute for a total of 7,084 acre-feet annually would produce ½ a foot of drawdown a mile and one-third away; however,

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[85] Transcript, pp. 325-326.

[86] Transcript, pp. 288-290.

[87] Transcript, pp. 291-292.

[88] Transcript, pp. 295-297.

[89] Transcript, pp. 305-306.

[90] Transcript, pp. 91-93, 107.

no evidence was provided that this model was calibrated or validated.[91]

- The Applicants' witness believes a well field could be designed that would not create drawdown outside of the Tule Desert basin boundary and would not dewater the fractured rock minimizing the loss from storage, and there will be a need to maximize the lateral extent of the drawdown.[92]
- The Applicants' witness believes there is no evidence there will be water quality degradation, the potential for land subsidence is insignificant, there will be no impact to the wells from which the Protestant VVWD currently draws water for its municipal system, or impacts to the Virgin River.[93]

The Protestant VVWD's evidence indicated that:

- The Protestant agrees with the Applicants' estimate that recharge in Tule Desert is approximately 8,000 acre-feet annually, and this should be looked at as a minimum value.[94]
- The original study by Glancy and Van Denburgh[95] is outdated.[96]
- The perennial yield in Tule Desert Hydrographic Basin is equal to the recharge,[97] and a second source of groundwater recharge may be inferred by geochemistry.[98] The perennial yield or groundwater recharge for Tule Desert is considered part of the yield for the

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[91] Transcript, pp. 309-310, 327-328.

[92] Transcript, pp. 310-311.

[93] Transcript, pp. 311-318.

[94] Transcript, pp. 544-546.

[95] Exhibit No. 21.

[96] Exhibit No. 47, p. 31.

[97] Transcript, p. 536; Exhibit No. 47, p. 31.

[98] Exhibit No. 47, p. 31.

lower Virgin River Valley.[99]

- The USGS has been doing new studies on recharge and perennial yield figures, and "in the last four or five years the numbers, they have switched, flopped on numbers a lot, they have trouble calculating evapotranspiration because that's sort of what determines, sort of what determines what the recharge is."[100]

- Ground water comes into the Tule Desert through a series of faults from the Clover Mountains, Bull Valley Mountains and Beaver Dam Mountains and moves directly into the lower Virgin River Valley. The recharge to the Muddy Creek formation in the lower Virgin River Valley, where the majority of the VVWD's existing wells are located, is from the carbonate-rock aquifer upgradient. Bunkerville wells, while located in alluvium, are pumping carbonate water.[101]

- Ground water appears to flow south towards the Virgin River.[102]

- The underlying bedrock at PW-1 is not the classic Paleozoic Carbonate Aquifer of central-eastern-southern Nevada.[103]

- "There may be more than one source of water for Tule Desert: the first source is from precipitation, mostly in the Clover Mountains and also directly on the alluvial fans, and perhaps to a minor extent on the valley floor. The second possible source of water, which is speculation based on a single deuterium value from the exploration production well drilled by LCVWCI, is ground water in carbonate rocks. The source of water is uncertain."[104]

- "Ground-water recharge moves from high to low altitudes in

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[99] Exhibit No. 47, p. 32.

[100] Transcript, pp. 542-44.

[101] Transcript, pp. 473, 550.

[102] Exhibit No. 46, pp. 16-35, 82.

[103] Exhibit No. 47, p. 16.

[104] Exhibit No. 47, p. 16.

response to gravity regardless of where in the basin the recharge water reaches the ground-water system. Generalized ground-water flow in the lower Virgin River Valley including Tule Desert is shown in Figure 6 (Dixon and Katzer, 2002, Plate 3 modified). Ground-water data are lacking to show movement along faults into Tule Desert from the lower Virgin River Valley."[105] Groundwater flow generally is toward the Virgin River in the Virgin River Valley.

- In the long term, the system may not have the ability to replenish the pumped water as fast as appears to occur along the fault/fracture zones.[106]
- Tule Desert is geologically and hydrogeologically a subbasin of the lower Virgin River Valley basin.[107]
- Protestant VVWD believes the Applicants' hydrologic assessment[108] has many misconceptions, errors in reporting, data taken out of context, conclusions by inference, among other issues raised.[109]
- The State Engineer could have 100 different hydrologists testify and receive 200-300 interpretations. Everything is subject to interpretation.[110]
- Wells can be receiving carbonate water without actually being drilled into the carbonate rock itself. PW-1 is not drilled into the classic carbonate, but is receiving carbonate water, which indicates the fractured rock system is bringing carbonate water into the strata from which PW-1 is pumping. This is similar to wells drilled in the Bunkerville area south of Mesquite on the

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[105] Exhibit No. 47, pp. 18-22.

[106] Exhibit No. 46, p. 82.

[107] Exhibit No. 46.

[108] Exhibit No. 27.

[109] Transcript, p. 478.

[110] Transcript, pp. 531-532.

south side of the river where the carbonate signature appears to be out of the Clover Mountains or Beaver Dam Wash. Water comes up from the fault system and has saturated the Muddy Creek formation.[111]

- The Virgin River has significant inflow in different areas, as indicated by the springs between Littlefield and Riverside Bridge, and water that comes out of Tule Desert accounts for a significant portion of the recharge downstream from the Littlefield gage.[112]
- By using a lower transmissivity than the Applicants' witness reported using (using 6,000 gal/day/ft) when running the Theis equation, the Protestant saw 100' of drawdown outside of Tule Desert in 20 years at 7,000 acre-feet annually of diversion, which would reverse groundwater gradients into Tule Desert and water from Tule Desert would no longer recharge the lower Virgin River Valley, interfering with permitted groundwater rights. If 14,000 acre-feet is pumped annually water level declines could perpetrate out into Hydrographic Basin 222 with water level declines of 400 feet over 40 years.[113]
- The Applicants' model is overly simplistic and cannot effectively address the impacts.[114]

The United States Geological Survey in Reconnaissance Series-Report 51 indicated that precipitation was the main source of ground water entering the valley-fill reservoirs in Tule Desert.[115] "Carbonate rocks locally may form a storage and transmission medium for ground water where solution cavities were formed along

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[111] Transcript, pp. 535-537, 550, 586.

[112] Transcript, pp. 547-555.

[113] Transcript, pp. 563-568; Exhibit No. 47, Figures 7 & 8.

[114] Transcript, p. 568.

[115] Exhibit No. 21, p. 19.

fracture systems and in other zones of weakness caused by percolating waters."[116] "The carbonate rocks commonly contain solution cavities or enlarged joints and fractures which, where interconnected, readily conveyed ground water. In contrast, local data suggest that the noncarbonate rocks are generally of low permeability and do not readily convey ground water."[117] "The carbonate rocks probably provide the route by which ground water in the Tule Desert moves generally south or southeastward to the lower Virgin River Valley."[118]

> Natural discharge from the Tule Desert area occurs by subsurface outflow. For lack of contrary evidence, the underflow is assumed to be southward toward the Virgin River. The possibility of salvaging all or part of the outflow within the valley depends on the manner in which outflow takes place. If water is moving over a "spillway" or "lip," a large part could be salvaged by drawing down the ground-water level below the outlet altitude. On the other hand, if the outflow is dispersed vertically through a permeable fault system or joint pattern, or if it occurs at considerable depth, only a small amount could be salvaged by pumping within the valley. Because salvable discharge probably lies somewhere between these two limits, the preliminary estimate of water that could be salvaged within the Tule Desert is assumed for reconnaissance purposes to be about one-half the estimated annual recharge or about 1,000 acre-feet.[119]

The recharge in the Tule Desert Hydrographic Basin has previously been established as 2,100 acre-feet annually, with a perennial yield established as 1,000 acre-feet annually.[120] The perennial yield of a groundwater reservoir may be defined as the

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[116] Id. at 18.

[117] Id. at 15.

[118] Id. at 18.

[119] Id. at 64.

[120] Exhibit No. 21, pp. 38, 63.

maximum amount of ground water that can be salvaged each year over the long term without depleting the groundwater reservoir. Perennial yield is ultimately limited to the maximum amount of natural recharge that can be salvaged for beneficial use. If the perennial yield is continually exceeded groundwater levels will decline.[121] Withdrawals of ground water in excess of the perennial yield contribute to adverse conditions such as water quality degradation, storage depletion, diminishing yield of wells, increased economic pumping lifts, land subsidence and possible reversal of groundwater gradients which could result in significant changes in the recharge-discharge relationship. The committed groundwater resource in the form of permits and certificates issued by the State Engineer to appropriate underground water from the Tule Desert Hydrographic Basin is currently 3.62 acre feet annually.[122]

The White River subregion of the carbonate-rock aquifer flow system, which is the portion of the carbonate-rock terrane discussed in State Engineer's Ruling Nos. 4243, 4542, 5008, 5115, and State Engineer's Order No. 1169, is the largest subregion delineated in the Colorado River region, and encompasses about 12,800 mi^2.[123] In comparison, the Virgin River subregion, which includes the Tule Desert Hydrographic Basin, on the east side of the Colorado River region, encompasses about 2,000 mi^2.[124]

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[121] State Engineer's Office, *Water for Nevada, State of Nevada Water Planning Report No. 3,* p. 13, Oct. 1971.

[122] Hydrographic Basin Abstract, Basin 221, official records in the Office of the State Engineer, August 2002.

[123] Prudic, David E., Harrill, James R. and Burbey, Thomas J., *Conceptual Evaluation of Regional Ground-Water Flow in the Carbonate-Rock Province of the Great Basin, Nevada, Utah, and Adjacent States,* U.S. Geological Survey Professional Paper 1409-D, p. D70, 1995.

[124] Id. at D69.

Therefore, the Virgin River subregion is only 16% the size of the White River subregion.

The testimony and evidence presented in this case raises the issue of when does the State Engineer accept evidence by a witness qualified as an expert as to the recharge of a groundwater basin, over the peer reviewed, decades accepted, independent evidence of recharge to a groundwater basin published by the United States Geological Survey in conjunction with the Nevada Department of Conservation and Natural Resources, Division of Water Resources. The State Engineer is very hesitant to accept the testimony of witnesses who come into testify on evidence as to recharge values that has not been peer reviewed and accepted by the independent third party analysis historically relied on by the State Engineer, particularly in an region with so little rainfall and the potential for such great and lasting impacts.

The State Engineer finds there is unappropriated underground water in the Tule Desert Hydrographic Basin. The State Engineer finds there is evidence supporting that 996 acre-feet are available on an annual basis using the established perennial yield figure and the evidence that PW-1 could likely produce that quantity over time. The State Engineer finds there is evidence to support granting an initial quantity of water over and above the 1,000 acre-feet annual perennial yield established in Water Resources Reconnaissance 51, but not in the quantity requested by the Applicants. The State Engineer finds that even though the Applicants and Protestant agree the recharge figure should be higher, a number that is three to four times over the previous estimates must be discounted until peer reviewed and accepted by the USGS and the Nevada Department of Conservation and Natural Resources, Division of Water Resources in light of the potential serious impacts that could be caused. However, the State Engineer finds there is room to give it some credence and perhaps allow some additional appropriation above the accepted perennial yield,

if the Applicants are willing to go forth with more study.

The State Engineer finds the production well identified as PW-1 has shown the ability to divert water for a 5 days at a rate of 1,400 gallons per minute, which converts to a diversion rate of 3.12 cfs for a total duty under a diversion rate expanded analysis of 2,258 acre-feet annually. However, the evidence also indicated a great deal of drawdown at that diversion rate. The State Engineer finds the recharge number currently accepted for the Tule Desert Hydrographic Basin is 2,100 acre-feet annually. Therefore, the State Engineer finds it reasonable based on the testimony and evidence to more than double the accepted estimated perennial yield and allow for the appropriation of 2,100 acre-feet annually under Application 64693 changed by Application 66932 at a diversion rate of 5.0 cfs. However, in the long-term there is a question if the system can replenish water as fast as it appears to occur along the fault fracture zones.

Due to the concern that this groundwater basin cannot sustain diversion of duties of the quantities requested, due to the fact it is unknown if this well can produce 7,240 acre-feet annually, due to the fact that this part of the regional flow system is much smaller than the White River subregion, and due to the fact that the State Engineer has agreed to allow the Applicants to hold Application 64692 in abeyance while they undertake further study of the basin, the State Engineer does not believe it reasonable to a grant a quantity of water above the 2,100 acre-feet being allowed until more proof is provided as to the ability to sustain that initial quantity of water over time without impacts.

The State Engineer realizes this is not the quantity of water requested for a water-cooled power plant such as the Cogentrix Toquop power plant project, but finds this is a reasonable amount in light of all the conflicting evidence and uncertainty as to whether this basin can support that large of a quantity of water diverted over time without depleting the storage in the basin and

in light of the potential of impacting the senior existing water rights in the Virgin River Valley.

The State Engineer finds the Applicants modeling analysis was lacking in that the model was not calibrated, validated and lacked actual data. The State Engineer finds by drilling wells and performing pump tests these Applicants have brought the State Engineer evidence as to water existing in the system; however, the pump tests were for a very short duration in relation to the large quantities of water the Applicants are requesting to appropriate from this groundwater basin, and there is little data available to whether the quantity of water is sustainable over time without impacts.

VII.

The Protestant VVWD alleged that the granting of the subject applications will adversely impact existing rights of the Protestant and could further adversely impact the potable water source for residents of the City of Mesquite, the Town of Bunkerville and others within the service area of the Protestant. The Protestant's evidence indicates that the:

> impacts from pumping 7,000-14,000 afy from Tule Desert for 20 to 40 years are obvious and severe. The amount of water removed from storage, including some percentage of annual ground-water recharge, will not be available to the lower Virgin River Valley ground-water basin. The ground-water system in Tule Desert will be depleted by the ground-water withdrawals of 7,000-14,000 afy plus the amount of ground-water outflow that cannot be captured as the basin approaches another steady state condition. Ground-water withdrawals in the Tule Desert of 7,000-14,000 afy will have an immediate and adverse impact on the lower Virgin River Valley by lowering the water level in the vicinity of Toquop Wash. The Tule Desert is connected with the lower Virgin River Valley by a system of north/south fault zones, primarily Gourd Springs, Toquop Wash, and

> Tule Springs Hills faults (fig. 3). These faults form a mechanism for ground-water recharge to the lower Virgin River Valley.[125]

The Protestant's evidence further indicates that potential significant groundwater level drawdowns of hundreds of feet could be created over a 20-40 year period of pumping 7,000-14,000 acre-feet annually that could extend outside the boundaries of Tule Desert.[126] The State Engineer recognizes this is based on a transmissivity value nearly half that used by the Applicants, but this is a good demonstration that, since two expert witness use such disparate transmissivity figures, the State Engineer should proceed cautiously as the consequences of not doing so could be devastating and placing reliance on that water could not be mitigated.

The State Engineer finds there is evidence that the regional flow of carbonate-rock aquifer water feeds the alluvium of the lower Virgin River Valley. The State Engineer finds there is insufficient evidence to prove whether it comes directly from Tule Desert, directly from other areas or generally from all of them. The State Engineer finds if the regional flow is what recharges the groundwater basin from which the VVWD obtains the potable water for its service area, there is a likely chance that the appropriation of significant quantities of water from the carbonate-rock aquifer upgradient in Tule Desert will over time impact the Protestant's existing rights. The State Engineer finds the lack of data and uncertainty in the science requires further study; therefore, the reason for allowing the appropriation of some water subject to comprehensive additional study, and for holding the second application in abeyance.

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[125] Exhibit No. 47, p. 33.

[126] Exhibit No. 47, Figures 7 and 8.

VIII.

The Protestant VVWD alleged that the granting of the subject applications, particularly when considered with other applications filed concurrently by the Applicants, would adversely impact the quality of water heretofore appropriated by the Protestant.

The State Engineer finds he is not considering the other applications concurrently filed by the Applicants, but rather is only acting upon the applications subject of this ruling. The State Engineer finds if the appropriation of large quantities of groundwater in Tule Desert affects the recharge of the Lower Virgin River Valley there may be a potential for impacts to the water quality in the Protestant's existing wells, thereby threatening to prove detrimental to the public interest.

IX.

The Protestant VVWD alleged that the granting of the subject applications, particularly when considered with other applications filed concurrently by the Applicants, are not in the public interest because the appropriation will adversely impact existing springs and seeps that provide a source of water for wildlife (including some species listed under the Endangered Species Act).

The State Engineer finds he has already found he is not considering the other applications concurrently filed by the Applicants, but rather is only acting upon the applications the subject of this ruling. The State Engineer finds no evidence was provided as to the appropriations adversely impacting existing springs and seeps that provide a source of water for wildlife.

X.

The Protestant VVWD alleged that the Applicant, Vidler Water Company, Inc., is barred from appropriating public waters in this State due to deficiencies in its status with the Nevada Secretary of State. The State Engineer finds no evidence was provided in support of this protest claim.

XI.

The Protestant VVWD alleges that the Applicants do not own or control the proposed place of use. In State Engineer's Ruling No. 5144,[127] the State Engineer found this protest issue bordered on meritless as no water district purveyor owns all of the land within the district boundaries to which it provides water service. In this instance, the Applicants do not own or control the proposed places of use. At this time, most of the land is held in the name of the U.S. Bureau of Land Management.

XII.

Application 64693 and change Application 66932 request an interbasin transfer of water, that is the proposed place of use is not the same hydrographic basin from which the water is appropriated. NRS § 533.370(4) provides that:

> In determining whether an application for an interbasin transfer of ground water must be rejected pursuant to this section, the state engineer shall consider:
> (a) Whether the applicant has justified the need to import the water from another basin;
> (b) If the state engineer determines that a plan for conservation of water is advisable for the basin into which the water is to be imported, whether the applicant has demonstrated that such a plan has been adopted and is being effectively carried out;
> (c) Whether the proposed action is environmentally sound as it relates to the basin from which the water is exported;
> (d) Whether the proposed action is an appropriate long-term use, which will not unduly limit the growth and development in the basin from which the water is exported; and
> (d) Any other factor the state engineer determines to be relevant.

The Applicants presented evidence that they must import water into Basin 222 to serve the Lincoln County Land Act lands, because

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[127] State Engineer's Ruling No. 5144, dated August 13, 2002, official records in the Office of the State Engineer.

the VVWD has refused to provide water service.[128] Testimony provided indicates that several legislative sessions ago, when the VVWD tried to include the Lincoln County Land Act land within the service area of the VVWD, Lincoln County indicated that it would fight such legislation.[129] The Applicants' argument about refusal on the part of the VVWD to serve the Lincoln County Land Act lands is a matter between those parties. However, since the VVWD holds nearly all the water rights in Basin 222, the State Engineer finds the Applicants do have a need to import water from another basin. The State Engineer finds he has not determined that a conservation plan is advisable for Virgin River Valley, but believes the conservation of ground water is good for every basin in Nevada. The State Engineer finds he is not sure the appropriation of the large quantity of water requested is environmentally sound for Tule Desert basin; therefore, the reason he cut back the initial amount being allowed for appropriation. The State Engineer finds he is not concerned that the use of water by one power plant may not be an appropriate long-term use of the ground water since there is little to no private land in Tule Desert.

XIII.

The State Engineer finds the Applicants' expression of a willingness to limit impacts is somewhat lacking when they hold nothing with which to mitigate. The State Engineer finds monitoring will be required as part of the study process that supports the reason for holding Application 64692 in abeyance.

XIV.

The State Engineer finds the Stipulation is between the Applicant and the National Park Service, and is not binding on him, but will be respected and considered. The State Engineer finds the monitoring, management and mitigation plan attached as

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[128] Exhibit No. 31.

[129] Transcript, pp. 639-640.

Exhibit A to the Stipulation is a good starting point, but he is not and will not be a signatory to said Stipulation, instead reserving to himself all authority and discretion he deems necessary for the management of the groundwater resources of the State of Nevada. The State Engineer finds after review of this decision the Applicant and the National Park Service are to submit a monitoring, management and mitigation plan for review by the State Engineer in order for him to determine if it contains all the elements he deems necessary.

CONCLUSIONS OF LAW

I.

The State Engineer has jurisdiction over the parties and the subject matter of this action and determination.[130]

II.

The State Engineer is prohibited by law from granting a permit under an application to appropriate the public waters where:[131]

A. there is no unappropriated water at the proposed source;
B. the proposed use or change conflicts with existing rights;
C. the proposed use or change conflicts with protectible interests in domestic wells as set forth in NRS § 533.024; or
D. the proposed use or change threatens to prove detrimental to the public interest.

III.

The State Engineer concludes there is unappropriated water in the Tule Desert Hydrographic Basin and the quantity granted, while above the established perennial yield is within the accepted range of potential estimated recharge, and is reasonable and fair.

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[130] NRS chapters 533 and 534.

[131] NRS § 533.370(3).

IV.

The State Engineer concludes the amount granted should protect existing groundwater rights of the Protestant VVWD. However, the State Engineer concludes the same cannot be said at this time as to the request for the substantially larger quantity of water; therefore, the reason for allowing the second application to be held in abeyance and further study to be conducted by the Applicants.

V.

The State Engineer concludes it does not threaten to prove detrimental to the public interest to allow further gradual staged development of the underground waters of the Tule Desert Hydrographic Basin coupled with monitoring and additional study.

VI.

The State Engineer concludes the provisions of NRS § 533.370(4) do not require rejection of the applications.

RULING

The protests to Applications 64693 and 66932 are overruled in part and upheld in part as demonstrated by the reduced quantity of water being permitted under the applications. Application 64693 is granted in the amount of 2,100 acre-feet annually and change Application 66932 is granted in that same quantity thereby fully abrogating Application 64693. Application 64692 is held in abeyance while the Applicants pursue additional study, which is to include, among other things, the amount of underground water available from the Tule Desert Groundwater Basin, recharge to the area and direction of groundwater flow. Applications 64693 and 66932 are granted subject to existing rights and the payment of

statutory permit fees. The Applicants have 1 year from the date of this ruling to indicate to the State Engineer whether they are willing to pursue the study process or Application 64692 will be subject to denial.

Respectfully submitted,

HUGH RICCI, P.E.
State Engineer

HR/SJT/jm

Dated this 26th day of

November, 2002.